CLAIMS

816357

1. A method of generating a cyclic sequence of frequencies, in which method a number of frequencies are selected in succession from a list of usable frequencies by means of a sequence of indices indicating respective positions in the list, said sequence of indices being derived from a kernel, in which a frequency generator arrangement is controlled to repeatedly generate the succession of frequencies so selected, and in which the list is updated in respect of the frequencies it contains between successive selections of a frequency therefrom, the detail of each updating being dependent upon the part of the succession of frequencies so far selected.

2. A method as claimed in Claim 1, wherein each updating is such as to result in a list which contains a respective subset of the frequencies contained in the list from which the first frequency of the succession of frequencies was selected, wherein each updating is such as to result in a list from which is excluded any frequency which differs from the frequency last selected by less than a predetermined amount, and wherein the updating immediately prior to the selection of the last frequency of the succession is such as to result in a list from which is also excluded any frequency which differs from the frequency first selected by less than said predetermined amount.

3. A method as claimed in Claim 2, wherein, if L denotes the length of the complete succession of frequencies, *l* denotes the length of the part of the succession of frequencies so far selected at any given time, and *m* is a predetermined integer greater than 1 and less than L,

each updating which occurs when $l < m$ is such as to result in a list from which is also excluded any frequency which differs from any frequency so far selected by less than said predetermined amount,

each updating which occurs when $m \leq l < L$ is such as to result in a list from which is also excluded any frequency which differs from any of the (m –

1) frequencies most recently selected by less than said predetermined amount, and

each updating which occurs when $(L - m) < l < L$ is such as to result in a list from which is also excluded any frequency which differs from any of the m - $(L - l)$ frequencies first selected by less than said predetermined amount.

4. A method as claimed in Claim 1, wherein each updating is such as to result in a list which contains a respective subset of the frequencies contained in the list from which the first frequency of the succession of frequencies was selected, and wherein, if L denotes the length of the complete succession of frequencies, l denotes the length of the part of the succession of L frequencies so far selected at any given time, and m is a predetermined integer greater than 1 and less than L,

each updating which occurs when $l < m$ is such as to result in a list from which is excluded all frequencies other than those which differ by less than a predetermined amount from the least number of the frequencies so far selected,

each updating which occurs when $m \leq l \leq (L - m)$ is such as to result in a list from which is excluded all frequencies other than those which differ by less than said predetermined amount from the least number of the $(m - 1)$ frequencies most recently selected, and

each updating which occurs when $(L - m) < l < L$ is such as to result in a list from which is excluded all frequencies other than those which differ by less than said predetermined amount from the least number of the $(m - 1)$ frequencies most recently selected and the m - $(L - l)$ frequencies first selected.

5. A method as claimed in claim 1 ~~any one of preceding Claims 1 to 4~~, wherein the value of each index i of the sequence of indices is given by

$$i = |f(\mathrm{ID})| \text{ modulo } W$$

where ID is the said kernel and W is the current length of the list.

6. A method as claimed in Claim 5, wherein the value of each index i of the sequence of indices is a function of the ordinal number, in the succession of frequencies, of the frequency being selected by that index.

7. A method as claimed in Claim 6, wherein the value of each index i is given by

$$i = |M^*(ID) + N + 1| \text{ modulo } W$$

where M is the ordinal number, in the succession of frequencies, of the frequency being selected by that index, ID is non-zero, and N is the number of frequencies contained in the list from which the first frequency of the succession of frequencies is selected.

8. Apparatus for generating a cyclic sequence of frequencies, comprising a frequency selector for deriving a sequence of indices from a kernel and using these indices to indicate respective positions in a list of usable frequencies to thereby select a succession of frequencies from the list, and a frequency generator arrangement for repeatedly generating the succession of frequencies so selected, wherein the frequency selector includes a list updater for updating the list in respect of the frequencies it contains between successive selections of a frequency therefrom in such manner that the detail of each updating is dependent upon the part of the succession of frequencies so far selected.

9. A radio communication system which employs frequency hop sequences generated by a method as claimed in ~~any one of Claims 1 to 7~~ Claim 1.

10. A radio communication system which includes apparatus as claimed in Claim 8 for generating frequency hop sequences.